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REMARKS

George:

Attached is a copy of the Presentation
Richard R. Schieffelin (QSI Contractor)
is presenting in Chicago on 25 March 1983
at the DPMA Conference.

Shanks

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OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
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QUALITY SYSTEMS INCORPORATED

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RICHARD R. SCHIEFFELIN

PRINCIPAL QUALITY ASSURANCE ANALYST



Quality

Systems

Incorporated

qsi

AGENDA

Experiences in Incorporating QA into a DP Organization

- I. QSI Overview
- II. Relevant Experience
 - A. Steps to consider
 - B. Tools
- III. Summary

Page Denied



Contract Activities Overview

Projects

- **Systems Integration**
- **Systems Development**
- **Systems Performance Evaluation and Enhancement**
- **Systems Quality Assurance**

Method

- **Apply System Engineering Principles to Quality Assurance Problems**

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**INCORPORATING
QA INTO A
DP ORGANIZATION**

001

**CREDIBILITY AND
ACCEPTANCE FROM PROJECT**

TOOLS

**TRAINED QA
PROFESSIONALS**

STANDARDS

CHARTER AND MISSION

MANAGEMENT SUPPORT



“MANAGEMENT SUPPORT HAS BEEN WON”

QSI EXPERIENCE CORROBORATES

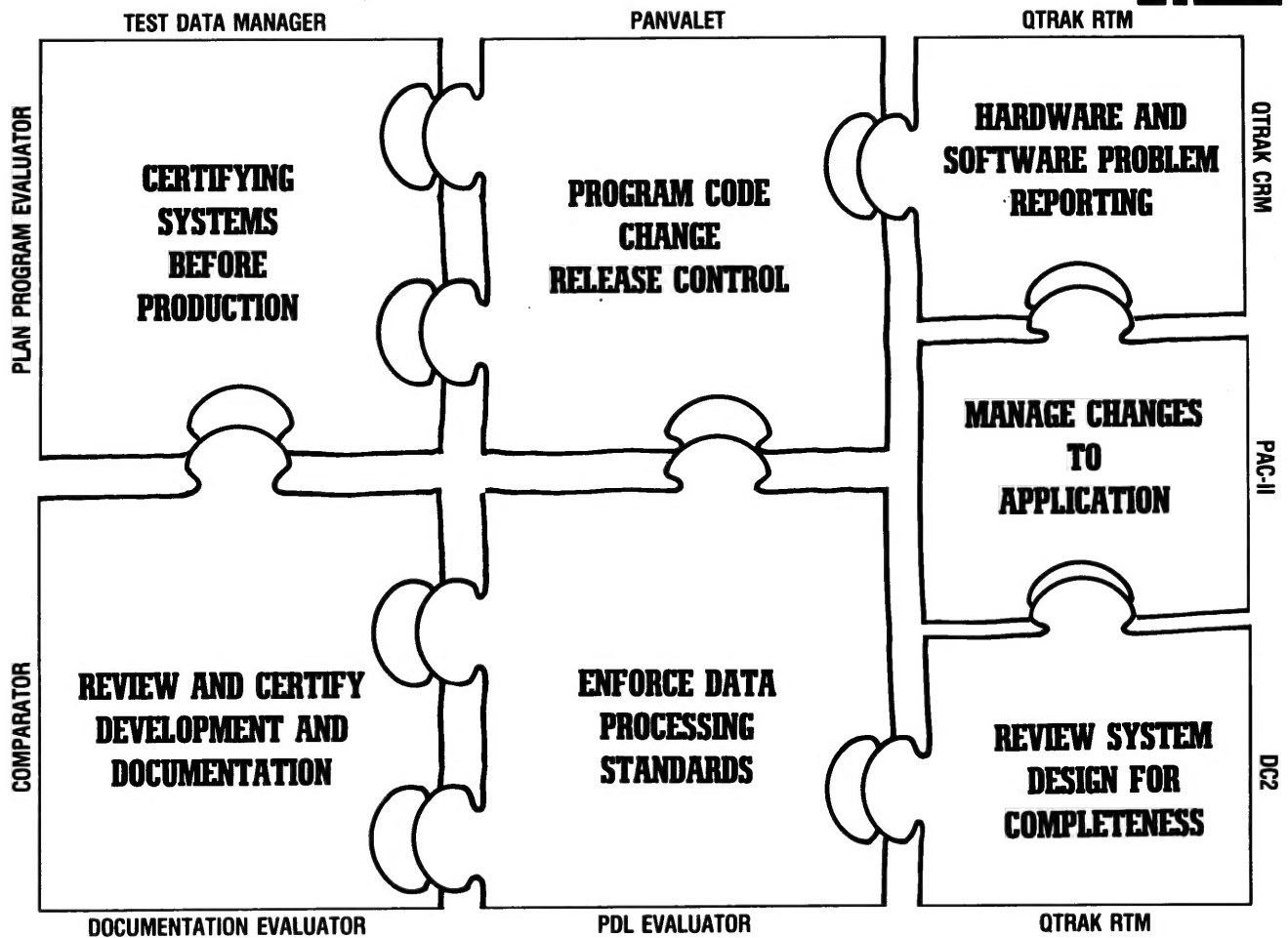
- QA Institute Survey
- Bill Perry's article in *Government Computer News*

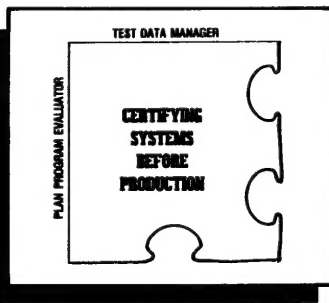
IN ADDITION

- Charter and Mission Have Been Established
- Standards Are Being Used

QA MISSION FUNCTIONS

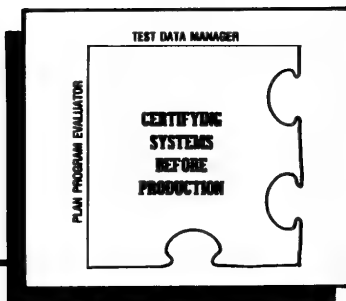
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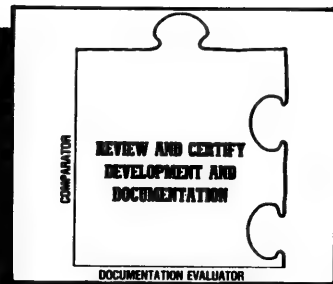
TOOL NAME—Test Data Manager	
WHAT IT IS	<ul style="list-style-type: none"> • Automated test data control and generation program
HOW IT WORKS	Using structured specifications: <ul style="list-style-type: none"> • Generates test data for acceptance test • Provides control of test data
BENEFITS/COSTS	<ul style="list-style-type: none"> • Repeatability of test data assured • Minimum resources required
PROBLEMS	<ul style="list-style-type: none"> • Start-up costs in small projects • Large data storage requirements
FUTURE	<ul style="list-style-type: none"> • Reductions in storage media cost make data generator more and more attractive



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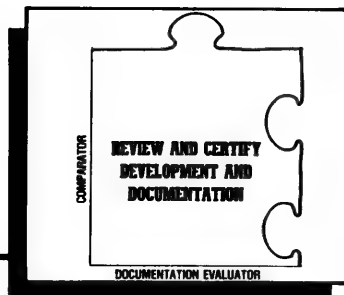
TOOL NAME—Boole & Babbage Plan Program Evaluator

WHAT IT IS	<ul style="list-style-type: none"> • Comprehensive extractions and reporting system to analyze system and problem performance
HOW IT WORKS	<ul style="list-style-type: none"> • Builds a comprehensive central file of data • Provides activity usage profiles for evaluation
BENEFITS/COSTS	<ul style="list-style-type: none"> • Time/usage profiles allow identification of small areas (5—10%) of code that use large (50—70%) amounts of resources • Minimal code changes provide maximum time savings
PROBLEMS	<ul style="list-style-type: none"> • Large extractor data files • Additional module analysis may reveal recoding requirements • System priority required for fixed resource allocation
FUTURE	<ul style="list-style-type: none"> • Improvements in evaluator being made to support real-time examinations



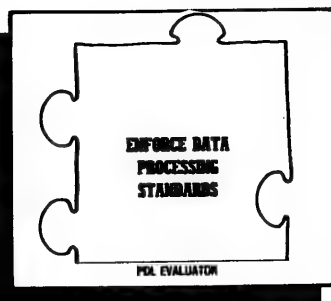
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TOOL NAME—Documentation Evaluator	
WHAT IT IS	<ul style="list-style-type: none"> • Program takes structured specification and compares it to standard
HOW IT WORKS	<ul style="list-style-type: none"> • Evaluates various levels of standard outline against document outline
BENEFITS/COSTS	<ul style="list-style-type: none"> • First-line check on great volume of documentation • Efficient and saves resources • Simple program
PROBLEMS	<ul style="list-style-type: none"> • Requires maintenance • Document and standard must be softcopy • No content analysis and document specific
FUTURE	<ul style="list-style-type: none"> • Greater use on large projects but needs refining



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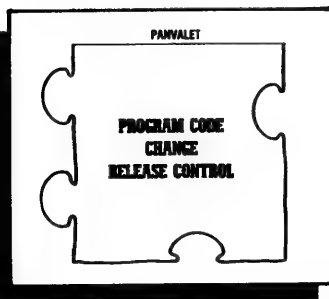
TOOL NAME—Comparator	
WHAT IT IS	<ul style="list-style-type: none">• Software library control program to compare two versions of the same computer program
HOW IT WORKS	<ul style="list-style-type: none">• Reads two files and lists the differences
BENEFITS/ COSTS	<ul style="list-style-type: none">• Identifies changes• Simple to use• Very efficient for large complex systems
PROBLEMS	<ul style="list-style-type: none">• Initial reference point for each module must be explicitly defined
FUTURE	<ul style="list-style-type: none">• Greater use on large projects



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TOOL NAME—PDL Evaluator

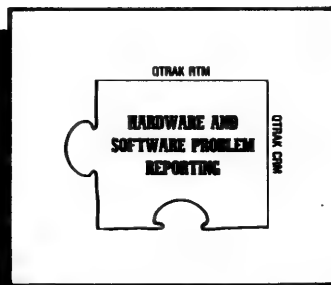
WHAT IT IS	<ul style="list-style-type: none"> • Compliance checker for PDL constructs
HOW IT WORKS	<ul style="list-style-type: none"> • Checks constructs if-then-else, do-while, etc. • Lists variations from pre-defined constructs
BENEFITS/ COSTS	<ul style="list-style-type: none"> • Ensures standards compliance • Minimizes coding errors • Ensures correct input to code generator
PROBLEMS	<ul style="list-style-type: none"> • Not a direct map from evaluation package to original standards
FUTURE	<ul style="list-style-type: none"> • Increased use to ensure more efficient and maintainable code



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TOOL NAME—Panvalet

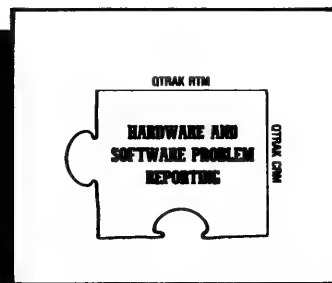
WHAT IT IS	<ul style="list-style-type: none"> • Program management and security system
HOW IT WORKS	<ul style="list-style-type: none"> • Builds and maintains a library of software modules • Source code, object code, load modules, JCL • Special text files
BENEFITS/COSTS	<ul style="list-style-type: none"> • Flexible • Efficient use of space • Simple to use • Compatible with most systems • Good reporting functions
PROBLEMS	<ul style="list-style-type: none"> • Dedicated librarian required • User training necessary
FUTURE	<ul style="list-style-type: none"> • Batch system use extended to VM/CMS environment • Growing use of library management and control systems



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TOOL NAME—Automatic Change Control, Management & Distribution System (CMD)

WHAT IT IS	<ul style="list-style-type: none"> • Information management system for electronic mail, file management, and user communication
HOW IT WORKS	<ul style="list-style-type: none"> • Allows users to create format, review, send, and receive documents in a controlled, easy manner
BENEFITS/COSTS	<ul style="list-style-type: none"> • Solves physical space storage problems • Access is controlled by classification, passwords, and privileges • Extensive accessibility
PROBLEMS	<ul style="list-style-type: none"> • Electronic mail is dependent on a reliable and available computer system • No backup • System administrator required
FUTURE	<ul style="list-style-type: none"> • Continuing improvement in user language and human engineering factors being made to enhance system



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TOOL NAME—QTRAK Communications & Reporting Module (CRM)	
WHAT IT IS	<ul style="list-style-type: none"> • Tracking system for problem reporting
HOW IT WORKS	<ul style="list-style-type: none"> • Data base query and reporting module • Audit, track, report on problem data base
BENEFITS/COSTS	<ul style="list-style-type: none"> • Minimizes data entry • Real-time status reports • Programmers can query CM records from terminal
PROBLEMS	Requires: <ul style="list-style-type: none"> • Training • Maintenance • Dedicated system administrator
FUTURE	<ul style="list-style-type: none"> • Increased use, most current status accounting reports possible



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TOOL NAME—PAC-II

WHAT IT IS	<ul style="list-style-type: none">• Computerized project management system
HOW IT WORKS	<ul style="list-style-type: none">• Allows planning, budgeting, monitoring, analyzing, and costing of projects• Batch/interactive system
BENEFITS/COSTS	<ul style="list-style-type: none">• Planning analysis using interactive system• Plethora of management reports• Graphic capabilities
PROBLEMS	<ul style="list-style-type: none">• Start-up time required• Planner/administrator training required
FUTURE	<ul style="list-style-type: none">• Improvements being made in MIS graphics interfaces• Expanded use of exception reporting features



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TOOL NAME—QTRAK Requirements Module (RTM)

WHAT IT IS

- Automated requirements traceability matrix

HOW IT WORKS

- Module for tracking requirements
- Indexes on requirements and documents

**BENEFITS/
COSTS**

- Requirements traced through life cycle
- Automated exception notification
- Quick, easy to use

PROBLEMS

- Requires maintenance
- Data integrity must be assured

FUTURE

- Increased use as systems become more complex



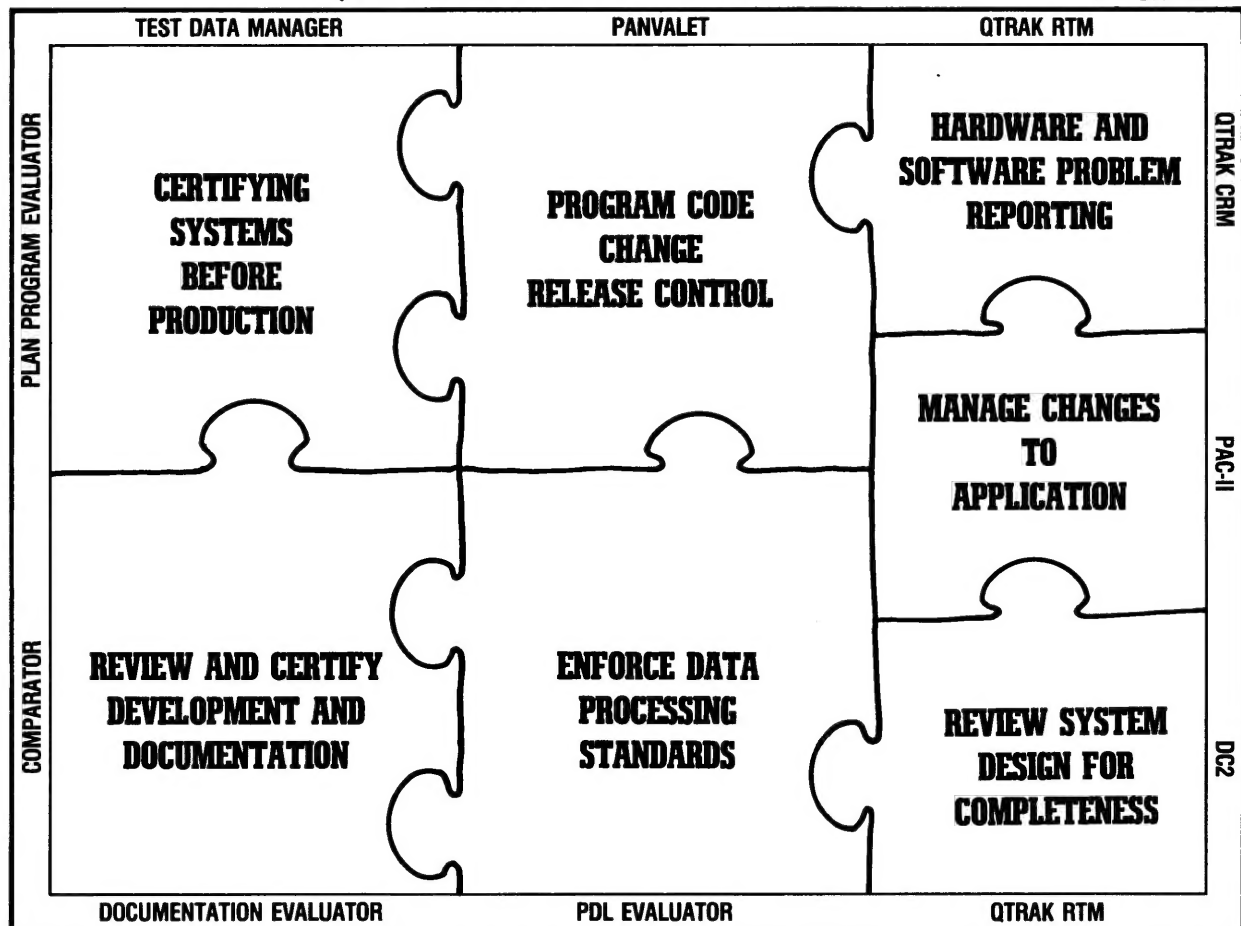
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TOOL NAME—Data Catalogue 2

WHAT IT IS	<ul style="list-style-type: none">• Automated data dictionary and tracking system
HOW IT WORKS	<ul style="list-style-type: none">• Establishes relational and hierarchial• Automatically track, monitor, and query to data element level
BENEFITS/ COSTS	<ul style="list-style-type: none">• Automatic generation of program structures COBOL, PL-1, ASSEMBLER• Interactive query and update features• On-line report generators
PROBLEMS	<ul style="list-style-type: none">• Complex system to be used with large problems• Startup time• User training
FUTURE	<ul style="list-style-type: none">• System improvements being made for custom dictionary facility to be used with top-down structured methods

QA MISSION FUNCTIONS

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TODAY'S QA ISSUES

PROBLEMS

- Significant gap in credibility and support from project personnel
 - Lack of trained QA professionals
 - Insufficient use of tools to support QA mission functions

SOLUTIONS

- Increased professional training
- Tools as a solution
 - Help projects do a better job
 - Find potential problems before become problems
 - Provide impartial judgment
 - Use most current methods



SUMMARY

FIRST STEPS HAVE BEEN MADE FOR INCORPORATION

- Management Support
- Charter and Mission
- Standards

THE NEXT STEPS

- Winning Credibility and Acceptance
 - Training QA Professionals
 - Greater Use of Tools

QA MUST

- Match the Available Tools with Functions
- Optimize Use
- Demonstrate How Tools Can Make QA and Workers More Efficient
- Develop Additional Tools